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Generative AI in Education: Comparative Analysis of Free Presentation Tools for Teachers

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Abstract: Since a significant amount of time and effort teachers spend on creating presentation, Generative Artificial Intelligence (GenAI) tools are used to automate many of the tasks associated with creating slides. Given the variety of GenAI presentation tools, the goal of this research was to identify those that are available online and offer free usage plans. Then compare and analyse them according to the identified features and recognized limitations, as well as the quality of the generated content. The obtained results indicate differences in the available free plans of the analysed tools, but the choice of a GenAI presentation tool depends on a number of different factors. However, teachers may be encouraged to use these tools mostly by the fact that they can create presentations in just a few minutes, possibly only by entering some additional options and instructions.

Keywords: Generative Artificial Intelligence; GenAI tools; Presentation; Slides; Teachers

1 INTRODUCTION

By embracing technological advances, education can remain relevant and effectively respond to the challenges of the digital world, thus preparing students for the demands of the 21st century. The field of artificial intelligence (AI) in education is focused on the research, development and evaluation of computer software that improves teaching and learning [1] and opens new possibilities such as personalized learning experiences and adaptation of educational materials to the individual needs of students [2]. Although teachers still have the main responsibility of teaching in any educational setting, artificial intelligence applications (AIA) are not only assisting education academically and administratively but also enhance their effectiveness [3].

Chen, Chen and Lin found that AI is already widely accepted and used in education. They confirm that with the help of AI, teachers were able to perform various administrative tasks more efficiently, such as reviewing and evaluating student assignments, and thus achieved a higher quality of their teaching activities. Also, the curriculum and teaching content can be adapted and personalized according to the needs of the students, thus improving the overall quality of learning [4]. Given this, for academic performance to be excellent, it is crucial to prioritize AI in education and implement its appropriate strategies to meet the needs and expectations of teachers and students through AI technologies [5].

However, since AI is still a relatively new field in education, it is necessary to encourage teachers to apply it by presenting them with the potential advantages that AI offers for both learning and teaching, as well as for their overall work in the classroom. Given that it is known that teachers often use presentations in their work, this paper will explore the possibilities of currently available AI tools that can generate presentations in just a few minutes, with the aim of making it easier for teachers to choose and use the tools.

2 GENERATIVE ARTIFICIAL INTELLIGENCE TOOLS

The term "generative artificial intelligence" (GenAI) refers to computing techniques that are capable of generating seemingly new, meaningful content such as text, images or audio from the data they have been trained on. Already well-known tools such as Dall-E, Chat GPT, Copilot or Gemini are changing the way we work and communicate with each other due to their availability [6]. GenAI is quite different from other technologies of the last 20 years, because of its ability to generate original work that is almost indistinguishable from that of human authors. Given these capabilities, the question arises whether GenAI technology will destroy education, as we know it now or whether it will solve all the problems of education. However, although is unlikely to destroy education, it can destroy the legitimacy of some long-standing educational practices [7].

For the time being, available research on GenAI refers mostly to higher education. In his paper, Chiu examines the impact of GenAI, specifically how Chat GPT and Midjournery tools affect education in four domains – learning, teaching, assessment and administration. The results provide three suggestions for practice: know-it-all attitude, new prerequisite knowledge, interdisciplinary teaching, and three implications for policy: new assessment, AI education, and professional standards [8]. Ruiz-Rojas et al. also with their the results obtained for higher education show that GenAI tools have significant potential in education, and this especially applies to their use in combination with an instructional design matrix for the development of massive MOOC virtual classrooms [2]. In their work, Kaplan-Rakowski, Grotewold, Hartwick, and Papin show that teachers express positive attitudes toward GenAI (or GAI) regardless of their teaching style. In addition, they show that the more often teachers used GenAI, the more positive their attitudes were. They believe that GenAI can advance their professional development and be a valuable tool for students [9].

3 CREATING PRESENTATIONS USING GENAI TOOLS

In education, presentations are often used in teaching. Although the use of other programs such as the Google Slides platform should not be neglected, the PowerPoint program is still the most widely used. Previous research on the use of PowerPoint in the classroom refers to student acceptance of PowerPoint as a measure of its effectiveness, and the results have overwhelmingly shown that students like PowerPoint.

In addition, PowerPoint has the potential to enhance learning, but only if we first learn how to use it effectively [10].

Creating presentation materials requires complex skills to summarize key concepts and arrange them in a logical and visually appealing way, so the question is whether computers can mimic this process [11]. A considerable amount of time and effort is spent on preparing presentation slides, and an automated slide generator can help save time, effort, and consequently costs. Currently, tools such as Microsoft PowerPoint and Open Office help provide an outline and theme for the slides, but do not help select the content of the slides [12].

Although there is relatively little research on GenAI tools related to presentation creation, the available works describe new approaches in their creation. Ganguly and Joshi propose an automated technique to generate presentation slides from a text document (text or pdf) so that the original concepts in the input document are conveyed to the output slides. The paper focuses on the use of different aspects of machine learning and text mining. All slides extracted in this way were found to be appropriate and satisfactory according to the user's context [13]. Fu, Wang, McDuff, and Song, on the other hand, present a way of working that includes document summarization, image and text retrieval, and a slide structure to arrange key elements in a form suitable for presentation. They propose a hierarchical sequence-to-sequence approach that exploits the inherent structures within documents and slides and includes paraphrasing and layout prediction modules for slide generation. They show that such an approach produces slides with rich content and aligned imagery [11].

Several papers describe the generation of presentations from scientific papers. Thus, Hu and Wan propose a new system called PPSGen that uses regression methods to learn the importance scores of the sentence in a paper, and then uses an integer linear programming (ILP) method to generate well-structured slides by selecting and aligning key phrases and sentences. The results show that this method can generate slides with much better quality than traditional methods [14]. Shaj and John also propose an automated system that generates presentation slides with the help of summarization, but from scientific papers in PDF format. The papers were summarized using the Google BERT algorithm. The PDF of the scientific paper is uploaded into the system, which will allow only the important sentences to be included on the slides. Thus, the summarized content of a long scientific paper is obtained, which can then be used in presentation slides [12]. Wang, Wan, and Du propose a phrase-based approach to generate well-structured and concise presentation slides for academic papers. Phrases are extracted from the given paper, and then the salience of each phrase and the hierarchical relationship between a pair of phrases are learned. Finally, a greedy algorithm is used to select and align the salient phrase. The evaluation results confirm the effectiveness of this proposed approach [15].

It is possible to conclude that the main goal of applying GenAI presentation tools is to create a visually appealing and dynamic presentation by automating various aspects of the slideshow, including slide design, content suggestions and data analysis, thus making the whole process faster and more user-friendly [16].

4 RESEARCH METHODOLOGY

It has already been mentioned that teachers very often use presentations for teaching purposes to make the instructional content more accessible and clearer to students. However, creating presentations requires additional effort from teachers. Therefore, applying a new approach to creating presentations using GenAI tools for teaching purposes would certainly contribute to allowing the teacher to focus more on presenting the content rather than on the design and other interactive elements of the presentation.

Since there are currently no available scientific papers that study and compare the use of GenAI tools for creating presentations, the primary goal of this research is to identify those that are available online, compare them, and analyze them based on identified features and recognized limitations, as well as the quality of the generated content.

However, to avoid financial costs for teachers or schools due to the application of GenAI tools, only tools with available free usage plans will be analyzed. This will provide insight into the possibility of using the free versions of these tools. The free usage plan in this research does not refer to the availability of a free trial plan, as it has a limited duration. Additionally, another criterion to be considered is that the tools must be exclusively available online, meaning their application does not require any additional installation. For this reason, GenAI tools for creating presentations for Google Slides will not be analyzed, as their use requires the installation of an extension.

Given that the search for tools has encountered the most commonly defined and mentioned features (F) that make a good AI presentation tool, the analysis of the tools will be carried out according to these features. These are:

- **F1-User-friendly interface**: a user interface that allows users to easily navigate and use its features without additional training
- **F2-Media Integration**: the incorporate of various multimedia elements such as images, videos and animations that increase engagement and help convey complex ideas
- **F3-Customization**: customization of templates, layout, fonts and colours
- **F4-Collaboration**: things like real-time editing, comments, and version history
- **F5-AI Enhancements**: smart suggestions for content organization, automated design suggestions, and speech-to-text capabilities [17]
- **F6-Integration with popular software**: export to programs such as Microsoft PowerPoint, Google Slides
- **F7-Tutorials**: possibility of support [18]

Based on the previously established research goal, three research questions were defined:

- **RQ1:** What are the differences in the free versions of GenAI tools for creating presentations with regard to the most common features?
- **RQ2:** What limitations can be identified in the free versions of GenAI tools for creating presentations?
- **RQ3:** What are the differences in the content of presentations created using GenAI tools?

The research was conducted by the authors of this paper. The first author, Rađep T., is a primary school computer science teacher with more than 20 years of professional experience. She is also involved in scientific research, examining the effects of innovative teaching strategies and digital technologies in education, which she personally implements. The second author is Bernik A., who has a Ph.D. in the field of social sciences, and one of his research interests is precisely artificial intelligence, especially GenAI tools. The authors conducted their research in the period from April to May 2024.

The search for tools was conducted by entering the term "AI presentation maker" into a web search engine to narrow the search options. This step did not yield a comprehensive list of tools but instead displayed individual tool websites. During this step, tools were listed and identified based on their payment plans. Furthermore, the word "list" was added to the previously entered term, and the search was conducted using the keywords: AI presentation maker list. This method provided much clearer results, highlighting the most popular tools as well as websites listing these tools at the top of the search engine results. In this step, another verification was performed, and the list of tools was supplemented.

Regarding the creation of the presentations themselves and the analysis of the tools, it was first necessary to log into the tool's website, which was done via a Google account or by entering an email address. To verify the newly generated content, the content obtained by entering the phrase "artificial intelligence in education" was analysed in this study. Since the authors are from Croatia, the goal was to obtain a presentation in Croatian. Another goal was for the presentation to have up to 10 slides, so for those tools that had this option, the number of slides was set to fewer than 10. Furthermore, the tools were analysed based on the previously defined features and the limitations they possess, as well as the generated content.

5 RESULTS AND DISCUSSION

To enable further analysis, the first result of this research is a list of currently available online GenAI tools for creating presentations that have been selected based on whether they offer a free usage plan. The obtained results are shown in Tab. 1.

It is important to note that the list of tools is frequently updated and that current free plans are subject to change, not only regarding payment but also in terms of the features they offer. Therefore, these results are relevant only for the period during which the research was conducted.

Research results show that out of 31 available GenAI presentation tools, 14 meet the predefined criteria, indicating that there are slightly more tools that do not offer a free usage plan. The initial analysis of the selected 14 tools was conducted by checking whether the tool meets the set condition, i.e., whether it possesses a specific feature. The features according to which the analysis was conducted have already been listed and described, and they are F1-intuitive interface, F2-media integration (images, videos, animations), F3-slide customization, F4-collaboration, F5-AI enhancements, F6-software integration (ppt), and F7-tutorials. After the analysis, each tool was attributed with the mentioned feature if it possessed it.

Table 1 GenAI tools for creating presentations with paid and free usage plan

Paid	Free
Appy Pie	Canva
AutoSlide	Gamma
Beautiful AI	Pitch
DeckRobot	PopAI
Dectopus	Sendsteps
Design.AI	Simplified
Kroma	Slidecast
Plus AI	SlideMake
Presentation.AI	Slidesgo
Slidebean	SlidesGPT
SlideModel	SlidesPilot
Samllppt	SlideSpeak
Storydoc	Visme
Tome	WePik
TypeSet	
WeSlides	
Wonderslide	

We can conclude that all analysed tools have an intuitive interface that makes it easier for users to find their way in online platforms, and most of them also have the option of providing help and support if the user encounters a problem, which makes their use easier, therefore these tools are not intended only for teachers who have IT skills. In addition, most of the tools have the option of including various multimedia elements, as well as the further possibility of customization the slides, which makes the resulting presentations more interesting, which is important when stimulating students' interest in the teaching content. A small number of tools have the possibility of additional improvement of content and elements with the application of AI and collaborative activities on the generated presentation. These options should not be essential for the creation of quality presentations and the use of the tool by teachers, but only depend on their preferences. However, the least available option is the integration with the software, that is, the export of the presentation in a format that allows for further editing, such as ppt format. Unfortunately, most of the analysed tools have this option, but not in the free plan.

These results on the differences in GenAI presentation tools in their free versions regarding the most common identified features answer the first research question and are shown in Tab. 2.

Table 2 Comparison of GenAI presentation tools according to defined features

GenAI tool	F1	F2	F3	F4	F5	F6	F7
Canva	+	+	+	+	+	+	+
Gamma	+	+	+	+	+	+	+
Pitch	+	+	+	+		+	+
PopAI	+	+	+		+		
Sendsteps	+	+	+		+		+
Simplified	+	+	+	+	+		+
Slidecast	+	+	+				+
SlidesMake						+	
Slidesgo	+	+	+				+
SlidesGPT	+						
SlidesPilot	+		+		+		+
SlideSpeak	+						+
Visme	+	+	+	+			+
WePik	+	+	+				+

During the application of the tools and the generation of content, it was observed that the tools in their free versions, in addition to the mentioned features, also differ in some additional limitations that could affect the teacher's decision on their use. The ability to create a number of presentations proved to be particularly important. The vast majority of tools in the free plan have a limited number of presentations and slides or AI credits. However, a slightly bigger problem is that even after deleting the files, some tools do not allow the creation of new presentations, but refer to some of the paid plans. In addition, teachers could be interested in the possibility of analytics that certain tools have, because in this way they would monitor the activities when making their presentations in the classrooms. However, unfortunately, this possibility, if the tools have it at all, is fully available in the paid versions. Although the possibility of integration with the software and download in ppt format has already been analyzed previously, some tools allow downloading presentations in other formats as well, e.g. pdf, png, jpg, which can be important for teachers if they intend to edit the presentation additionally or just save it. In addition, it is limiting that only half of the analyzed tools allow the creation of content by uploading documents such as word, pdf documents, or even ppt presentations, considering that this option also reduces the time for teachers to create a presentation.

As for the actual presentation, there are also some limitations. As previously stated, although some tools enable the creation of content by uploading a document, this paper analyzed presentations created only by entering citations, considering that all tools have this possibility. But even here there are differences according to additional options that are entered before creating the presentation itself, such as the number of slides, number of words, type of audience, topic, style of presentation and presentation, duration and the like, which is visible in more than half of the analyzed tools. Additionally, some tools have the ability to modify the text before the final presentation is generated, so that the text can be checked, reducing corrections in the finished presentation.

Table 3 Comparison of GenAI presentation tools with regard to recognized limitations

GenAI	Limits	Upload	Detailed creation	Analytics	Export
Canva	10 slides	-	-	+	ppt, jpg, pdf, pdf, mp4
Gamma	400 credits, 10 (cards)	word, ppt, Google Slides/Docs	+	basic	ppt, pdf (Gamma branded)
Pitch	-	ppt	-	-	ppt, pdf (Pitch branded)
PopAI	1 project, 15 pages	word, pdf			
Sendsteps	2 ppt, 15 slides	pdf, pptx, docx, txt	+	-	-
Simplified	-	-	-	-	jpg, png, video, gif
Slidecast	-	-	-	-	pdf
SlidesMake	-	-	-	-	ppt
Slidesgo	14 slides	-	+	-	jpg, pdf
SlidesGPT	-	-	-	-	-
SlidesPilot	1 ppt	pdf, word	+	-	-
SlideSpeak	1 ppt	pdf, word, ppt, xls	+	-	-
Visme	10 AI credit limits	-	+	-	jpg, png, pfd
WePik	1 ppt	pdf, word, ppt, xls	+	-	-

Table 4 Comparison of GenAI presentation tools with regard to the resulting content of the presentation

GenAI tool	Extensive content	Croatian language
Canva	-	+ (translation)
Gamma	+	+
Pitch	-	-
PopAI	+	-
Sendsteps	+	+
Simplified	-	-
Slidecast	-	+
SlidesMake	+	-
Slidesgo	+	+
SlidesGPT	+	+
SlidesPilot	+	+
SlideSpeak	-	-
Visme	-	-
WePik	+	+

The identified limitations are the answer to the second research question and are shown in the Tab. 3.

In order to get an answer to the third research question, the content obtained in the presentations was analyzed. Despite the statement being in Croatian, half of the analyzed tools generated content in English. Due to the necessary translation, the application of these tools would be difficult for teachers in Croatia. In addition, differences were observed regarding the comprehensiveness and detail of the content. The results show that half of the tools provide very detailed content that hardly needs to be supplemented. This is very important because in this way teachers do not have to spend time on additional corrections and supplementing the text in presentations. No necessary connection was observed between the introduction of additional options when creating the presentation and the resulting content in terms of detail and extensiveness

Recognized differences with regard to the resulting content of the presentation are shown in the Tab. 4.

6 CONCLUSION

There is an increasingly urgent need for educators and researchers in the field of education to propose suitable ways and practices with the help of which students and teachers will be able to smoothly absorb the upcoming changes in education, especially with respect to the teaching-learning process [19].

One of the possibilities by which teachers can successfully respond to the challenges of the new age is using AI. As most teachers use presentations in their work, with the

help of GenAI presentation tools they can create a visually attractive and dynamic presentation in such a way that various processes are automated, and then they have more time to focus on the content itself. However, choosing an AI presentation tool depends on a number of different factors such as existing presentation tools, typical presentation style, and how someone like to work with coworkers and colleagues [20].

The results of this research show that now there are a large number of tools on the market that enable the creation of presentations using AI. Almost half of the recognized tools listed in this paper offer a free usage plan, and all tools can be accessed via a Google account or by entering an email. The fact that presentations can be created in just a few minutes by uploading a document or just by entering the topic of the presentation and possibly some additional options and instructions could encourage teachers to use the tool. However, depending on the selected tool, the presentations will differ in terms of the extensive and detail of the content, as well as some possibilities with which the presentation can be supplemented, such as, for example, the integration of various multimedia elements. What could demotivate teachers the most to use these tools in the free usage plan is the limited number of presentations and slides, and the language of the content in the resulting presentations. However, the goal of the free usage plan is to show the basic capabilities of the tool itself so that users will be interested in purchasing it, but further decisions about use still depend on their preferences and needs. Considering that each tool has several pricing plans of usage, it is up to the teacher to evaluate which of the plans suits him best for application in the teaching process.

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